

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in view of the above amendments and the following remarks, is respectfully requested.

Claims 21-24 are pending in this application. By this amendment, Claims 1-20 have been canceled and Claims 21-24 have been added. It is respectfully submitted that no new matter has been added.

In the outstanding Office Action, Claims 1, 7, 8, 12 and 17 were objected to; Claims 1, 2, 4-14 and 16-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Walton et al. (U.S. Patent No. 2003/0125040 A1, hereinafter “Walton”); and Claims 3 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Walton as applied to Claims 2 and 14 above and further in view of Foschini et al. (U.S. Patent No. 6, 317,466 B1, hereinafter “Foschini”).

Responsive to the objection to Claims 1, 7, 8, 12 and 17 objecting to the acronym “SDM”, those claims have been canceled. Accordingly, it is respectfully requested that the objection to Claims 1, 7, 8, 12 and 17 be reconsidered and withdrawn.

Claim 21 recites, in part:

receiving control information transmitted by the system of communication partner;

determining, based on the received control information, a first weight for one of the plurality of information signals with respect to the plurality of antennas, and a second weight for another one of the plurality of information signals with respect to the plurality of antennas;

generating a first operation result by multiplying the one of the plurality of information signals by the first weight, and generating a second operation result by multiplying the another one of the plurality of information signals by the second weight; and

generating, based on the first operation result and the second operation result, a plurality of the output signals each corresponding to one of the plurality of antennas, and

transmitting the plurality of the output signals to the system of communication partner.

Claim 23 recites similar subject matter in device format. It is respectfully submitted that these features are neither disclosed by nor rendered obvious by Walton, Foschini or the combination thereof.

The Office Action asserts that Walton discloses:

selecting a transmission signal to be used in the radio transmitter apparatus based on the estimated transmission-related information (paragraph 81-82); notifying the radio transmitter apparatus of a control signal describing the transmission signal to be used (paragraph 82); and selecting an antenna to be used based on the control signal and sending the information signal from the selected antenna to the radio receiver apparatus, by the radio transmitter apparatus (paragraph 82).

Applicants respectfully disagree.

Walton describes:

With adaptive transmit processing, the coding and modulation scheme used for the data transmission may be selected based on the characteristics of the communication channel, which may be quantified by channel state information (CSI). The CSI may be determined at a receiver unit (e.g., a terminal) and reported to a transmitter unit (e.g., a base station). The transmitter unit may then adjust the coding and modulation of the data transmission based on the reported CSI.¹

Walton states “[a]t each active terminal 106, RX MIMO/data processor 260 further estimates the conditions of the downlink and provides channel state information (CSI) (e.g., post-processed SNRs or channel gain estimates) indicative of the estimated link conditions.”²

Walton states that after processing, the receiver 106 “transmit(s) the downlink CSI back to base station 104.”³

¹ Paragraph [0011].

² Paragraph [0080].

³ Paragraph [0080].

Walton then states that base station 104 “recovers the reported CSI, which is then provided to controller 230 and a scheduler 234.”⁴ Walton explains the process at base station 104 as follows:

Scheduler 234 uses the reported downlink CSI to perform a number of functions such as (1) selecting the best set of terminals for data transmission and (2) assigning the available transmit antennas to the selected terminals. Scheduler 234 or controller 230 further uses the reported downlink CSI to determine the coding and modulation scheme to be used for each transmit antenna. Scheduler 234 may schedule terminals to achieve high throughput and/or based on some other performance criteria or metrics, as described below.⁵

As clearly described by Walton, the receiver terminal 106 reports channel state information (CSI) to the base station transmitter 104. Transmitter 104 then selects the best set of terminals for data transmission and assigns the available transmit antennas to the selected terminals. It further uses the reported downlink CSI to determine the coding and modulation scheme to be used for each transmit antenna. In Walton, there is no weight determination or generating an operation result by multiplying by the determined weight. Finally, in Walton the transmitter does not transmit the plurality of output signals to the system of communication partner. That is because in Walton the function of determining the best set of terminals, the available transmit antenna and the coding and modulations scheme is determined by the transmitter.

Therefore, Walton fails to describe the features of independent Claims 21 and 23 described above.

Foschini fails to correct the deficiencies of Walton pointed out above. Foschini describes using multiple antennas at both the transmitter and receiver and decomposing the

⁴ Paragraph [0081].

⁵ Paragraph [0082].

channel into m sub channels to significantly increase the bit rate at which a digital wireless communications system communicates data in scattering environments.⁶

It is respectfully submitted that dependent Claims 22 and 24 are patentable at least for the reasons argued above with regard to the claims from which they depend.

Accordingly, it is respectfully requested that the rejections of Claims 1-20 be reconsidered and withdrawn, and that Claims 21-24 be found allowable.

Consequently, for the reasons discussed in detail above no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below-listed telephone number.

Respectfully submitted,

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⁶ Abstract.